

- Marsh (O. C.) *Restoration of Comptosaurus*. 8vo. [*New Haven*] 1894. The Author.
- Praschkauer (M.) *Ein Abriss ueber das Englische Arbitrations—*  
(*Schiedsrichter*) *Wesen*. 8vo. *London* 1894. The Author.
- Schwalbe (B.) *Über wissenschaftliche Fachlitteratur und die Mittel*  
*dieselbe allgemein und leicht zugänglich zu machen*. 8vo.  
*Berlin* [1894]. The Author.
- White (W. H.), F.R.S. *A Manual of Naval Architecture*. Third  
edition. 8vo. *London* 1894. The Author.
- Williamson (B.), F.R.S. *Introduction to the Mathematical Theory*  
*of the Stress and Strain of Elastic Solids*. 8vo. *London* 1894.  
The Author.

Circular Case for a Rumford Medal, made out of the wood from an ash tree, until lately growing in front of Count Rumford's house, North Woburn, Massachusetts, and contemporary with him.

Rumford Historical Association, North Woburn, Mass., through Dr. Ephraim Cutter.

*April 26, 1894.*

The LORD KELVIN, D.C.L., LL.D., President, in the Chair.

A List of the Presents received was laid on the table, and thanks ordered for them.

Pursuant to notice, Professor Henri Ernest Baillon, Professor Henri Poincaré, and Professor Eduard Suess were balloted for and elected Foreign Members of the Society.

The following Papers were read:—

- I. "On the Specific Heats of Gases at Constant Volume. Part II. Carbon Dioxide." By J. JOLY, M.A., Sc.D., F.R.S. Received March 9, 1894.

(Abstract.)

In the former experiments on this gas, recorded in the first part of this research,\* the highest absolute density at which the specific heat was determined was 0.0378. In the present observations the deter-

\* "On the Specific Heats of Gases at Constant Volume," Part I, 'Phil. Trans., A, vol. 182, 1891, pp. 73-117.

minations of specific heat have been carried to densities at which the substance was partly in the liquid state at the lower limit of temperature of the experiments. Observations dealing with true specific heat, uncomplicated by the presence of thermal effects due to the presence of liquid, are limited by the density 0.1444. At this density the mean specific heat over the range, 12° C. to 100° C., is 0.2035.

The following table contains a summary of the mean results of the experiments in which no liquid is present at the initial temperature. The range of these experiments lies between air temperature (12° to 16°) and steam temperature—

Specific heat.	Density.	Specific heat.	Density.
0.1714	0.0377	0.1942	0.1177
0.1759	0.0498	0.1948	0.1178
0.1778	0.0554	0.1963	0.1238
0.1794	0.0604	0.1994	0.1322
0.1799	0.0635	0.1992	0.1323
0.1839	0.0771	0.2025	0.1443
0.1869	0.0891	0.2030	0.1444
0.1895	0.1016	—	—

These observations, combined with those contained in Part I (*loc. cit.*), afford a well defined line, which rises slowly at the higher densities, turning away from the axis of density.

According to an empirical equation to this line, the specific heat of carbon dioxide at constant volume is given in terms of its variation with density  $\rho$ , as follows :—

$$C_v = 0.1650 + 0.2125\rho + 0.3400\rho^2.$$

This is in fair agreement with the linear equation deduced in Part I from the limited number of experiments at low densities therein contained :—

$$C_v = 0.16577 + 0.2064\rho.$$

In these experiments a spherical vessel of copper was used to hold the gas, having a voluminal capacity of about 86 c.c., a mass of 137 grams, and an estimated resistance to bursting of 300 atmos. This, as in the former experiments, was equilibrated against a similar vessel in a differential steam calorimeter. These vessels produced each a precipitation, due to its own calorific capacity of 2.1 grams of steam. It was found, however, that closely agreeing results (to 1 per cent. about) were obtained when the precipitation due to the gas fell to as little as 0.15 gram.